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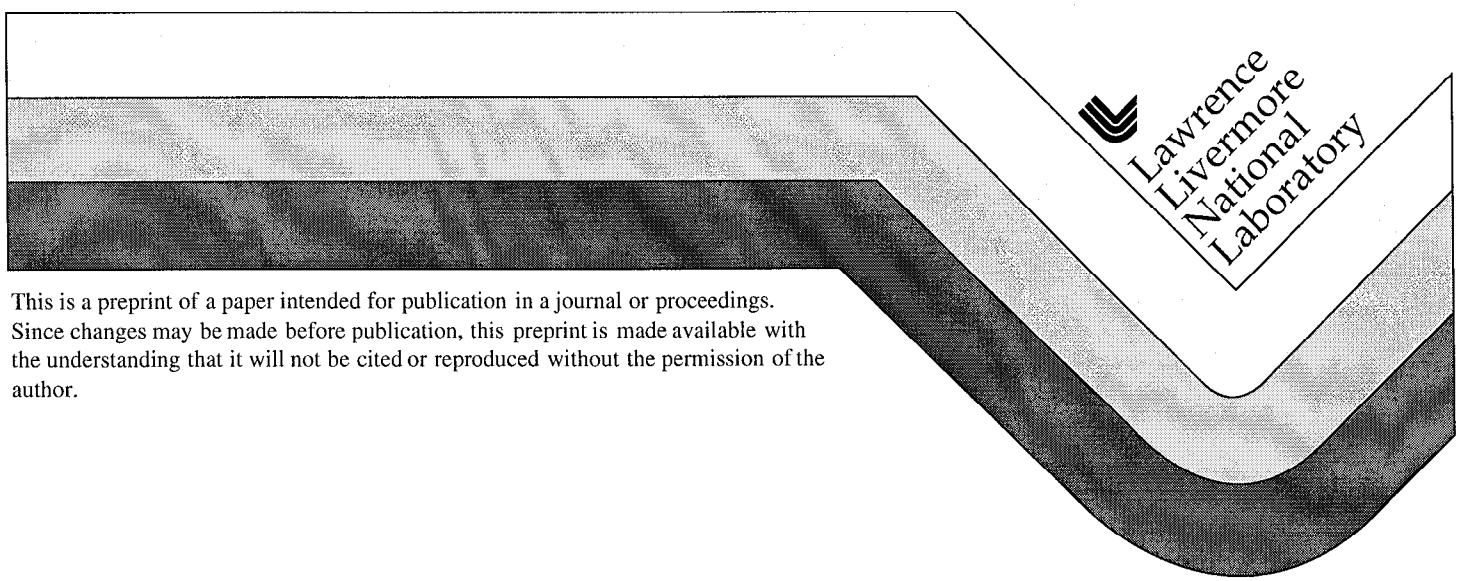

Why Some Laboratories Were Successful In Changing Their Safety Cultures

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Abstract

The paper describes a laboratory safety benchmarking initiative conducted by Lawrence Livermore National Laboratory. Several private and government research laboratories were assessed with respect to their safety systems, management controls, and employee involvement. The laboratories with the best safety records were compared to those with average to poor safety histories.

Introduction

Lawrence Livermore National Laboratory's (LLNL) Director chartered the Safety Improvement Task Force (SITF) to begin the process of implementing the Department of Energy's (DOE's) Integrated Safety Management (ISM) system. In turn, the SITF chartered a task force to benchmark the safety statistics and processes at other research laboratories to better understand LLNL's safety programs and records. The team included line managers from the Computation and Nonproliferation/Arms Control/International Security Directorates, physicians from Health Services, and a research psychologist from the Hazards Control Department.

This summary discusses the leadership and employee factors that apparently shaped the safety programs of the seven R&D labs we visited. Four were from the DOE complex and three from the private sector. The safety records at the national labs ranged from the best to the worst in the complex. The private labs all had best in class safety records. One of the national labs visited had a safety record comparable to the private sector labs.

Caveats

This discussion is based on information given us by a limited number of people during a one day visit to each site. It does not necessarily present an accurate, thorough description of each lab. As with LLNL, each lab is a complex mixture of programs, personalities, leadership styles, and levels of effectiveness. This summary is a snapshot of the information each lab chose to give to us.

There is a scaling issue that should be kept in mind. For the most part, the labs we visited were much smaller than ours. Many would be the size of a large program at LLNL. This should not be viewed as an implementation problem. Most research strongly supports the notion that quality leadership and team work are scaleable. In other words, the behavioral and organizational principles summarized here will apply to LLNL.

None of the successful labs is perfect. Some just had better leadership systems that molded their culture. I will discuss briefly the following topics

- Differences in Research, Operations, and Safety Cultures
- Leadership versus "Grass Roots" Driven Safety Programs
- Management-Systems-Employee Triad
- Reward Practices for Bringing About and Sustaining Change
- The Pain that Culture Change Brings
- So the leader is on board....who's the next most important person in a culture change
- Do you need to assess worker attitudes?
- What is management accountability and involvement

Differences in Research, Operations, and Safety Cultures

In general, the research cultures at the private and public labs were very similar. This was one of the most surprising personal observations. But, it must be remembered that the core product of these labs is research...basic and applied...with emphasis given to the former. Their research cultures appeared to be collegial, open, and decentralized. They were staffed with competitive and internally driven scientists. Management provided broad guidelines within which research was to be conducted.

The Operations' cultures (facilities infrastructure) were very similar to LLNL's. They were very proud of their work, protective of their own, and, in a sense, psychologically separated from the research culture to which they were obviously committed.

The cultures of the labs with the best records were disciplined, focused, and committed to the

notion that safe behavior is as much a professional attribute as was technical competency, whether someone is a physicist or carpenter. The best labs had implemented behavioral systems that in fact held line managers accountable. Such a system is not overtly dealt with in ISM. The labs with the poorer safety records had not integrated safety values into their technical work with the same intensity as the best in class.

In the successful labs, safety and professional work were inextricably melded. A few people verbally acknowledged this ("Good research needs both the GENIUS to make new discoveries and the DISCIPLINE to do it safely."). For others, it was implicit in their work and behavior. On the other hand, at the struggling labs, I had a sense that their safety cultures were disjointed and very much disembodied from their leadership and research activities. For example, one DOE lab (with one of the poorer safety records) had come to grips with managing ISM as a project, but not with leading people to the behavioral changes that would be required.

Leadership versus "Grass Roots" Driven Safety Programs

In cases where lab-wide cultural changes were made, it was not a "grass roots" revolution that initiated or sustained the change...it was a leader who decided to make a difference.

At some of the labs, there were successful behavioral-based safety programs that were either developed in-house by employees or brought in by a consultant. But, none of these programs ever migrated out of the organization (typically the facilities department) in which it started.

It is not that these programs were without merit. In most cases they did bring about local changes in safety records. Usually they started in departments where worker-supervisor rifts existed. The employees seemed to want to make a difference, but were frustrated by management practices and lack of quality leadership. Managing safety by intentionally separating management and workers may serve its purpose in the short run, but is not a healthy organizational practice in the long run. Most of the "grass roots" behavioral safety programs were struggling with how to integrate first-line managers into the system.

What about the leaders that made a difference?:

In each case, there appeared to be a moment when the senior managers seriously committed themselves and their labs to a cultural change. Sometimes that decision was forced on them; but, they clearly accepted that mandate. At the successful labs, leaders usually committed their organizations to an evolutionary change in culture, rather than generating a step-function change.

The leaders of the labs with good safety records had a vision...but, they did not necessarily know the path. In some cases, the path they took was provided by a corporate framework and then implemented it locally. One relied on an internally developed system and OSHA's Voluntary Protection Program.

Management-Systems-Employee Triad

The successful labs all fell back on the classic safety triad: management commitment and involvement; organizational safety systems and structures; and employee involvement.

Management involvement: Consisted of making a leadership vision statement and the development of a safety philosophy or policy. The later were broad-based statements that committed the organization to specific activities. Involvement also consisted of managers:

- Leading the development of the specific activities identified in the philosophy,
- Tracking safety performance and holding their "direct reports" accountable for specific accomplishments, and
- Changing the behavior of their "direct reports" through personal leadership and reward systems.

Safety systems: Consisted of organizational processes that supported correct and safe work practices. These included hazards and risk assessments, wellness programs, behavioral-related audits, and procedures.

Employee involvement: Consisted of teaming with management to develop and maintain the structures required to support correct and safe work practices.

Reward Practices for Bringing About and Sustaining Change

In the organizations that brought about lab-wide changes, the Director set in motion a system

which held his direct reportables accountable. Through his personal influence, that process cascaded down through the management chain. In short, this was the engine that drove their safety frameworks. *At each of the labs with good safety records, management accountability started with the Director requiring his direct reports to personally present their safety systems and accomplishments to the senior laboratory management councils in a peer review venue.*

Organizations that were successful in maintaining good safety records had put in place systems that (1) continually reminded people of the required behavioral objectives, (2) periodically monitored those behaviors, and (3) appropriately rewarded people. Nothing fancy...just effective. Importantly, it was done at each management level.

For most, the path to cultural change was to use the three steps mentioned above to bring about a change in

- Upper and mid level managers' behavior,
- First line supervisors' behavior, and
- Workers' behavior.

The change in behavior produced...a change in values, which produced...a change in their culture. This is a classic sociological process. As one national lab's plant department demonstrated, this must be done in an environment that fosters trust, respect, and communication. They took the time to learn how to do it right by not just telling people to communicate better, but by having work-based learning sessions where real examples were played out.

The Pain that Culture Change Brings

All the successful labs acknowledged the pain they felt as change was occurring.

The leader's pain: First comes the doubt of whether his or her organization should change. Second comes the emotional trauma resulting from convincing people that they need to change. A third source of pain comes about from misjudging when just enough change has occurred, and when you must begin sustaining that change.

The mid level managers' and supervisors' pain: At this level, change is interpreted to mean that they had some how failed. Mid level managers are responsible for taking vague policy and philosophy statements and turning them into concrete organizational systems and new worker behaviors. This is hard work and a source of pain.

Workers' pain: If there is trust and respect for the leader (and his or her behavior is rational) there is usually very little pain at this level. Problems come if the leader disregards or misjudges the level of trust and respect the workers have in him or her.

So the leader is on board....who's the next most important person in a culture change?
Once the leader made his commitment and engaged his direct reports in the process, the first line supervisor (foreman or Principle Investigator) was seen as the most significant barrier to implementation. There are several possible explications:

- Supervisors are the linchpins to any leadership process. They take management policy and convert it into concrete observable goals for workers. Supervisors must "personalize" a leader's vision statements. "This is what 'work safely' should mean to you." If done poorly or ineffectively by the supervisor, the policy will not have a chance.
- Supervisors view a cultural change as a direct challenge to the way they had been doing business. With a cultural change, their boss just said they had been doing it wrong.
- Supervisors who were promoted from the technical ranks have not been taught "people skills" that come with leadership training. This training should be distinguished from compliance-based management training.
- Supervisors (particularly Principal Investigators in an R&D setting) learned leadership from their graduate professor. They learned that graduate research assistants were chattel. It is difficult to break old habits, particularly when a Principal Investigator's mid level leader is doing the same thing.

When I asked about supervisor training, each lab (even the good ones) said they needed to improve the way they "raise" their supervisors.

Do you need to assess worker attitudes?

If you take a systems approach to an organization (feedback is a requirement for error correction), the answer is yes. Leadership metrics usually incorporate organizational performance ("Did we

meet our organizational goals?") and employee satisfaction ("Did we meet our personal goals?").

In the organizations that brought about large changes in their cultures, the leaders did not just assume they knew what workers were thinking. These assessments were often spotty. Some done thoroughly and well. Others were done in a sporadic fashion. But, the point is not lost on employees when leaders show that they care what workers are thinking. The problem raised at one site was the danger that surveys are viewed as meaningless when the leaders did not close the loop on action items.

If an off-the-shelf behavioral-based safety program is started, an early worker-manager survey is necessary to determine how the program is to be implemented. Do we need to keep supervisors out of the way? When should they be brought in as an integral part of the process?

What is management accountability and involvement?

These two factors are what drive an organization to replicate its leader's style down through the organization.

A leader does not have to worry about personally holding his whole management chain accountable...only his direct reports. Every lab with the best safety records said that a leader needs to establish his presence; but, it does need to be managed carefully. If not, that famous *New Yorker* cartoon will become larger than life. In it a manager is saying, as he rushes by a worker at a desk, "Good job...whoever you are...and whatever you're doing."

Accountability: A leader needs to implement (consciously or not) some basic principles of behavioral science. Simply put, leadership is about setting the standards, monitoring the behavior, then providing a "contingent" reward. Recent leadership research has helped us distinguish effective from lackluster leaders in how they implement this essential leadership "accountability loop."

The point here is that ineffective leaders believe that setting the standards ("Go work safely") is what motivates his direct reports....and then can't understand why they had an accident. Those leaders have forgotten that the antecedent (the policy) is not what's inherently motivating. It's the reward.

Line management accountability is firmly in place when direct reports know that a leader will in fact establish a behavioral standard, check to see if it was achieved, and provide an appropriate reward. Remember that the Directors who had their direct reports present their safety accomplishments at the senior management councils had the best safety records. It works whether the leader is the Director and the direct reports are Assistant Directors, or the leader is a foreman and his direct reports are carpenters. The high performing labs we observed clearly instantiated this phenomenon.

Involvement: This is essential...involvement is what changes a manager into a leader. It provides observable proof that a leader truly means it when he says "Follow me. This is how we are going to work safely."

At the successful labs, the Directors required each of their senior management staff to be accountable for a small part of their lab's safety framework. (The word "accountable" is used in the same sense as in the previous section.) As a result, senior management were led into being involved in changing their culture. They had learned how to delegate responsibility, without abrogating accountability.

Senior management staff were given significant latitude to implement their part of the framework. Some delegated. Some took an active personal role. But, each had to personally report their accomplishments to the Director (and usually in front of his peers). It was at this point when the Director closed the "accountability loop." In turn, these senior managers soon learned how to close the "accountability loop" with their direct reports...and so on down the management chain.

Biography

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